

ABSTRACT

**EFFECTS OF BATIK WASTE WATER DISPOSAL
TO THE Cd AND Cu LEVELS IN RIVER WATER, DUG WELL WATER,
AND BLOOD AS HEALTH COMPLAINTS COMMUNITY IN
PEKALONGAN CITY**

The production process of batik is indicated to use synthetic chemicals. Materials used in the synthetic dyes usually contain heavy metals, such as Cadmium and Cuprum. Most of Batik industry liquid waste in Pekalongan has not been managed properly. Batik waste is usually streamed to rain water channel that flows towards the river. This study aimed to analyze the influence of batik waste water disposal on the level of Cd and Cu in the river water, well water, blood and the public health complaints in Pekalongan.

The type of the research was an analytic observational study with cross-sectional study design. The research samples of 16 people for each group of exposed and unexposed were taken by simple random sampling technique. Analysis of the data use simple linear regression, multiple-linear regression and logistic regression.

Results of the analysis of the effect of Batik wastewater disposal to the level of Cd and Cu in the river water showed that there was effect of Batik waste water disposal to the level of Cd in the river water ($p = 0.000$ and $b = 0.746$); there was also effect to the level of Cu in the river water ($p = 0.000$ and $b = 0.834$); there was effect of Cd in the river water to the level of Cd in the well water ($p = 0.004$ and $b = 0.283$), the effect of Cu in the river water to the level of Cu in the well water could not be analyzed. There was also effect of Cd in the well water to the level of Cd in the blood ($p = 0.000$ and $b = 0.901$), the effect of Cu in the well water to the level of Cu in the blood could not be analyzed. The effect of Cd in the blood to the heart health complaints ($p = 0.009$ and $PR = 17.043 > 1$) and the bone health complaints ($p = 0.009 < 0.05$ and the PR value = $24.139 > 1$). The effect of Cu in the blood to the heart health complaints ($p = 0.004 < 0.05$ and PR value = $1.009 > 1$).

Conclusions that there is effect of batik wastewater disposal to the level of Cd and Cu in the river water. Cd in the river water affects the level of Cd in the well water. It also affects the level of Cd in the blood. Last but not least, the level of Cd in the blood affects the heart and bone health complaints; Cu level in the blood also affects the heart health complaints.

Key Word: Batik Wastewater, Cadmium, Copper, River Water, Well Water, Blood, Health Complaints

ABSTRAK

PENGARUH PEMBUANGAN AIR LIMBAH BATIK TERHADAP KADAR Cd DAN Cu PADA AIR SUNGAI, AIR SUMUR GALI, DAN DARAH SERTA KELUHAN KESEHATAN MASYARAKAT DI KOTA PEKALONGAN

Proses produksi batik diindikasikan menggunakan bahan kimia sintetis. Bahan pewarna sintetis yang digunakan mengandung logam berat, diantaranya adalah Cadmium dan Cuprum. Limbah cair industri batik di Kota Pekalongan sebagian belum dikelola dengan baik. Limbah batik biasanya dialirkan ke saluran air hujan yang selanjutnya dialirkan menuju sungai.

Penelitian ini bertujuan untuk menganalisis pengaruh pembuangan air limbah batik terhadap kadar Cd dan Cu air sungai, air sumur gali, dan darah serta keluhan kesehatan masyarakat di Kota Pekalongan.

Jenis penelitian adalah penelitian observasional analitik dengan desain cross-sectional study. Sampel penelitian sebanyak 16 orang untuk tiap kelompok terpajan dan tidak terpajan yang diambil dengan teknik simple random sampling. Analisis data menggunakan regresi linier sederhana, regresi linier ganda, dan regresi logistik.

Hasil penelitian menunjukkan pengaruh pembuangan air limbah batik terhadap kadar Cd air sungai ($p = 0,000$ dan $b = 0,746$), dan terhadap kadar Cu air sungai ($p = 0,000$ dan $b = 0,834$). Pengaruh kadar Cd air sungai terhadap kadar Cu air sumur gali ($p = 0,004$ dan $b = 0,283$), pengaruh kadar Cu air sungai terhadap air Cu air sumur gali tidak dapat dianalisis. Pengaruh kadar Cd air sumur gali terhadap kadar Cd darah ($p = 0,000$ dan $b = 0,901$), pengaruh kadar Cu air sumur gali terhadap kadar Cu darah tidak dapat dianalisis. Pengaruh kadar Cd darah terhadap keluhan kesehatan hati ($p = 0,009$ dan $PR = 17,043 > 1$) dan terhadap keluhan kesehatan tulang ($p = 0,009 < 0,05$ dan nilai $PR = 24,139 > 1$). Pengaruh kadar Cu darah terhadap keluhan kesehatan hati ($p = 0,004 < 0,05$ dan nilai $PR = 1,009 > 1$).

Kesimpulan penelitian ini adalah ada pengaruh pembuangan air limbah batik terhadap kadar Cd dan Cu air sungai. Ada pengaruh kadar Cd air sungai terhadap kadar Cd air sumur gali. Ada pengaruh kadar Cd air sumur gali terhadap kadar Cd darah. Kadar Cd darah berpengaruh terhadap keluhan kesehatan hati dan tulang, kadar Cu darah berpengaruh terhadap keluhan kesehatan hati.

Kata Kunci : Air limbah batik, Kadmium, Tembaga, , Air sungai, Air sumur gali, Darah, Keluhan Kesehatan